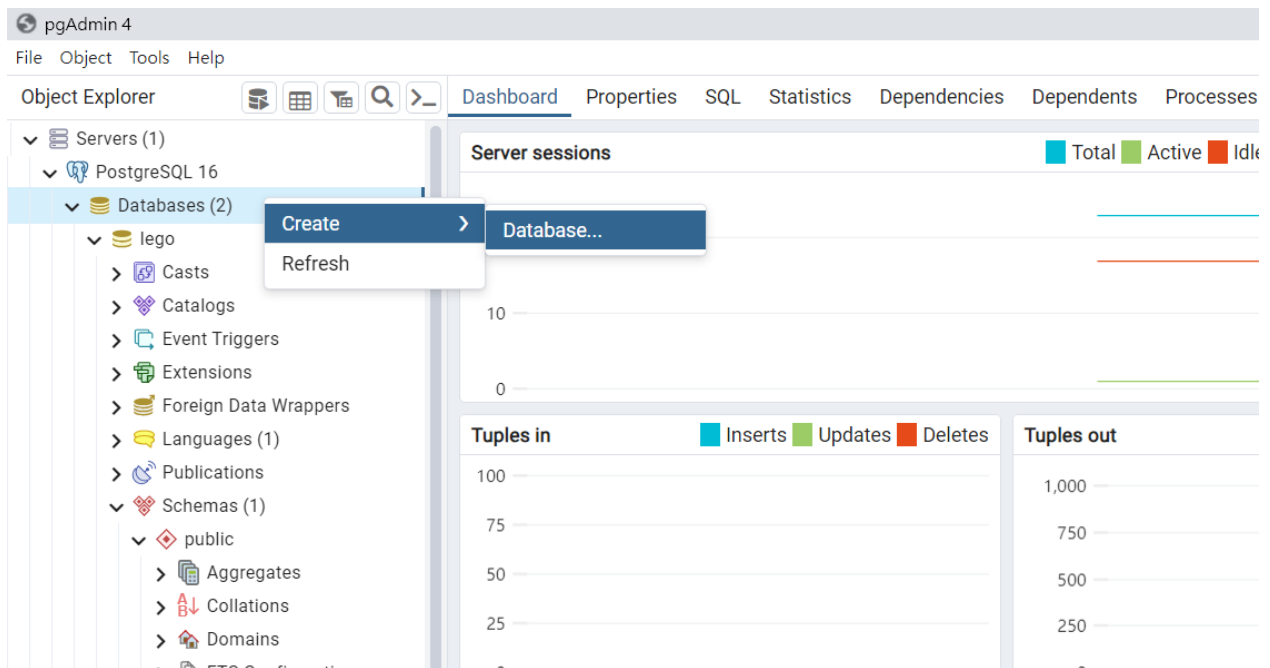


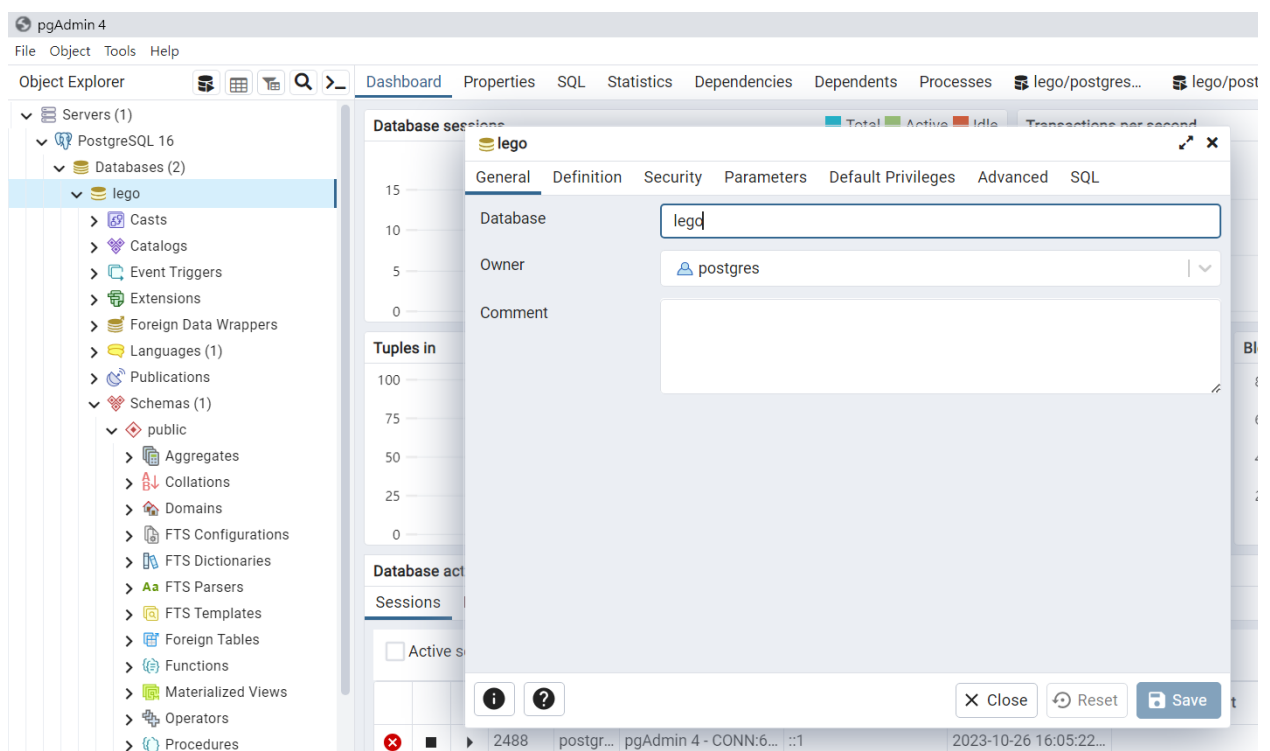
HW1_110550103

Q1.The process of creating the "lego" databases.

Using pdAdmin4 create database.

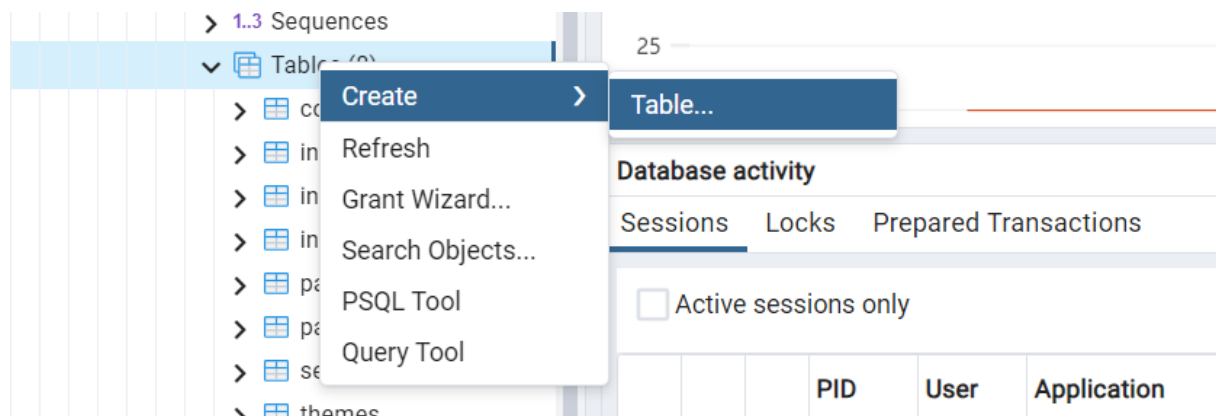


Click save, then database "lego" is created.

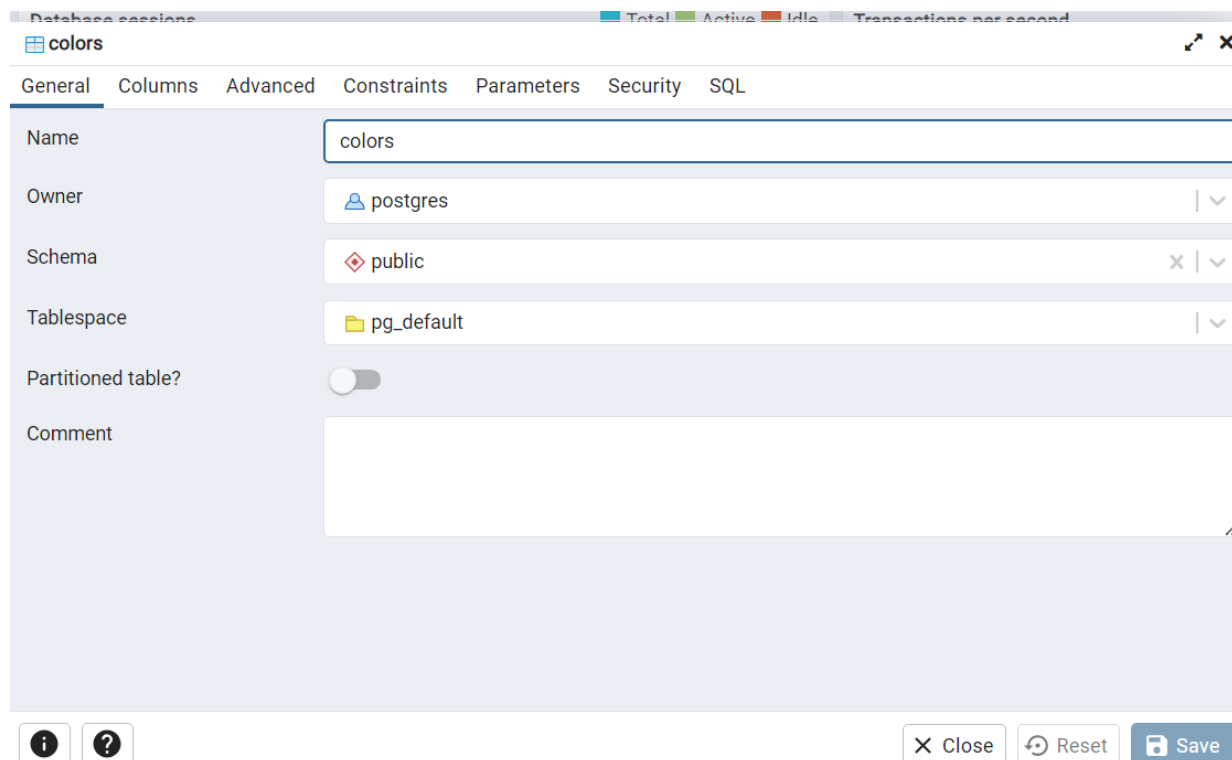


Q2.The process of importing eight required .csv files into lego database. Please include/describe the data type and keys of the imported table in your screenshot, SQL statements, and explanations.

Using Table to create table



colors:



id is unique, so I set it as Not NULL and primary key.

colors

General Columns Advanced Constraints Parameters Security SQL

Inherited from table(s)

Columns							
	Name	Data type	Length/Precision	Scale	Not NULL?	Primary key?	Default
	id	integer			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	name	character varying	50		<input type="checkbox"/>	<input type="checkbox"/>	
	rgb	character varying	10		<input type="checkbox"/>	<input type="checkbox"/>	
	is_trans	"char"			<input type="checkbox"/>	<input type="checkbox"/>	

Import colors.csv file

Object Explorer

- Schemas (1)
 - public
 - Aggregate
 - Collations
 - Domains
 - FTS Config
 - FTS Diction
 - FTS Parse
 - FTS Temp
 - Foreign Ta
 - Functions
 - Materialize
 - Operators
 - Procedures
 - Sequences
 - Tables (8)
 - colors
 - inventor
 - inventor
 - inventor
 - part categories

Count Rows

- Create
- Delete
- Delete (Cascade)
- Refresh...
- Restore...
- Backup...
- Import/Export Data...
- Reset Statistics
- ERD For Table
- Maintenance...
- Scripts
- Truncate
- View/Edit Data
- Search Objects...
- PSQL Tool
- Query Tool
- Properties...

board Properties SQL Statistics Dependencies Dependents Processes

base sessions

■ Total ■ Active ■ Idle

Trans

4

3

2

1

0

es in

■ Inserts ■ Updates ■ Deletes

Tuples out

1,000

750

500

250

0

base activity

ions Locks Prepared Transactions

Import/Export data - table 'colors'

General
Options
Columns

Import/Export

✓
Import

Export

Filename

D:\桌面\NYCU\資料庫\hw1\themes.csv

Format

csv

Encoding

UTF8

i
?

Close
Reset
OK

inventories:

Table creation is as same as "color" do

Id is unique, so I set it as Not NULL and primary key.

Import inventories.csv as "color" do.

Inventories

General
Columns
Advanced
Constraints
Parameters
Security
SQL

Inherited from table(s)

Select to inherit from...

Columns

+

	Name	Data type	Length/Precision	Scale	Not NULL?	Primary key?	Default
	id	integer			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	version	integer			<input type="checkbox"/>	<input type="checkbox"/>	
	set_num	character varying	50		<input type="checkbox"/>	<input type="checkbox"/>	

i
?

Close
Reset
Save

inventory_parts:

Table creation is as same as "color" do

Every attribute is not unique, so I didn't set primary key.











Import inventory_parts.csv as "color" do.



inventory_parts

General Columns Advanced Constraints Parameters Security SQL

Inherited from table(s) Select to inherit from...

Columns +

	Name	Data type	Length/Precision	Scale	Not NULL?	Primary key?	Default
 	inventory_id	integer			<input type="checkbox"/>	<input type="checkbox"/>	
 	part_num	character varying	50		<input type="checkbox"/>	<input type="checkbox"/>	
 	color_id	integer			<input type="checkbox"/>	<input type="checkbox"/>	
 	quantity	integer			<input type="checkbox"/>	<input type="checkbox"/>	
 	is_spare	"char"			<input type="checkbox"/>	<input type="checkbox"/>	

  Close Reset Save

inventory_sets:

Table creation is as same as "color" do

set_num is unique, so I set it as Not NULL and primary key.







Import inventory_sets.csv as "color" do.



inventory_sets

General Columns Advanced Constraints Parameters Security SQL

Inherited from table(s) Select to inherit from...

Columns +

	Name	Data type	Length/Precision	Scale	Not NULL?	Primary key?	Default
 	inventory_id	integer			<input type="checkbox"/>	<input type="checkbox"/>	
 	set_num	character varying	50		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
 	quantity	integer			<input type="checkbox"/>	<input type="checkbox"/>	

  Close Reset Save

part_categories:

Table creation is as same as "color" do

id is unique, so I set it as Not NULL and primary key.





Import part_categories.csv as "color" do.



part_cateproes

General Columns Advanced Constraints Parameters Security SQL


Inherited from table(s) Select to inherit from...


Columns +

	Name	Data type	Length/Precision	Scale	Not NULL?	Primary key?	Default
 	id	integer			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
 	name	character varying	50		<input type="checkbox"/>	<input type="checkbox"/>	



X Close

 Reset

 Save

parts:

Table creation is as same as "color" do

part_num is unique, so I set it as Not NULL and primary key.







Import parts.csv as "color" do.



parts

General Columns Advanced Constraints Parameters Security SQL


Inherited from table(s) Select to inherit from...


Columns +

	Name	Data type	Length/Precision	Scale	Not NULL?	Primary key?	Default
 	part_num	character varying	500		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
 	name	character varying	500		<input type="checkbox"/>	<input type="checkbox"/>	
 	part_cat_id	integer			<input type="checkbox"/>	<input type="checkbox"/>	



X Close

 Reset

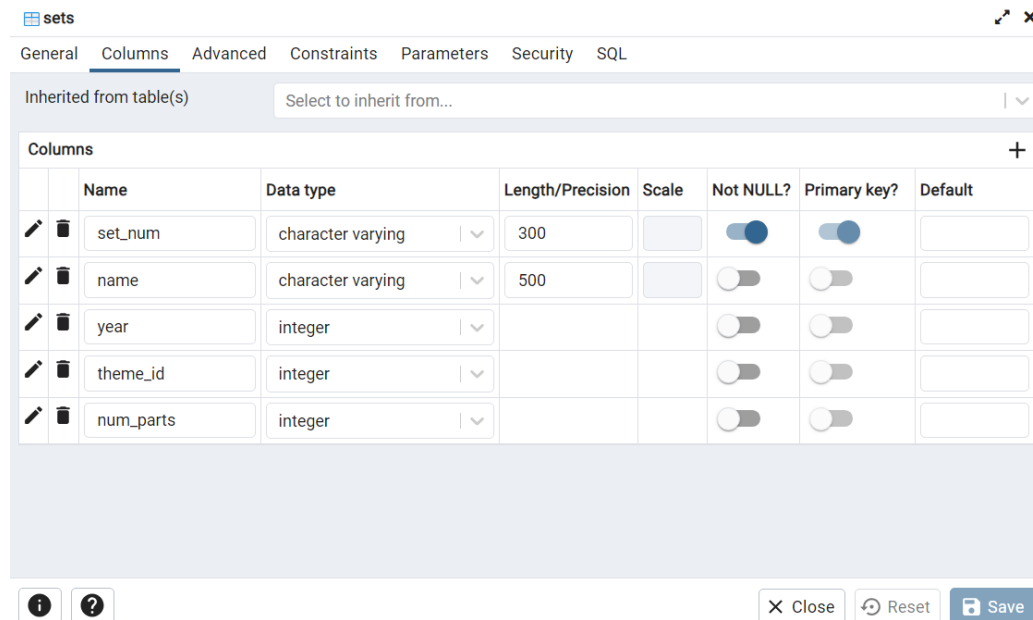
 Save

sets:

Table creation is as same as "color" do

set_num is unique, so I set it as Not NULL and primary key.

Import sets.csv as "color" do.



sets

General Columns Advanced Constraints Parameters Security SQL

Inherited from table(s) Select to inherit from...

Columns +

	Name	Data type	Length/Precision	Scale	Not NULL?	Primary key?	Default
	set_num	character varying v	300		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	name	character varying v	500		<input type="checkbox"/>	<input type="checkbox"/>	
	year	integer v			<input type="checkbox"/>	<input type="checkbox"/>	
	theme_id	integer v			<input type="checkbox"/>	<input type="checkbox"/>	
	num_parts	integer v			<input type="checkbox"/>	<input type="checkbox"/>	

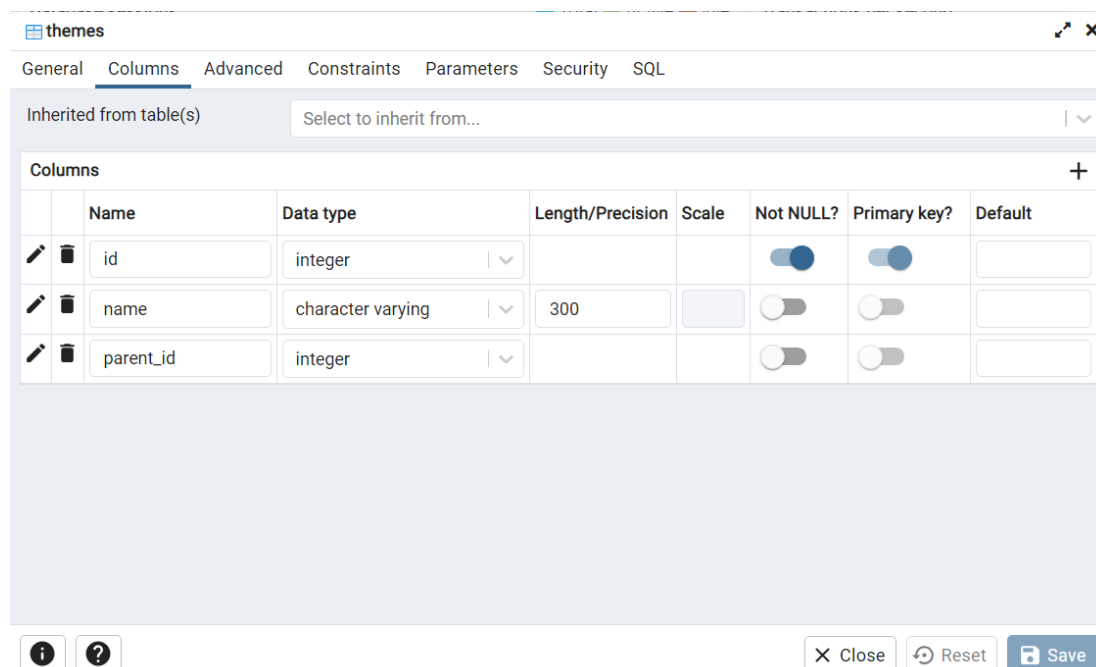
Close Reset Save

themes:

Table creation is as same as "color" do

id is unique, so I set it as Not NULL and primary key.

Import themes.csv as "color" do.



themes

General Columns Advanced Constraints Parameters Security SQL

Inherited from table(s) Select to inherit from...

Columns +

	Name	Data type	Length/Precision	Scale	Not NULL?	Primary key?	Default
	id	integer v			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	name	character varying v	300		<input type="checkbox"/>	<input type="checkbox"/>	
	parent_id	integer v			<input type="checkbox"/>	<input type="checkbox"/>	

Close Reset Save

Q3.The SQL statements and output results of 4a

```
select sets.name as sets_name, themes.name as themes_name
from sets join themes
on sets.theme_id = themes.id
where sets.year = 2017
```

Total row: 296

https://github.com/KennyHsu91/2023_fall_DB/blob/master/hw1/result/4a.csv

	sets_name character varying (500)	themes_name character varying (300)
1	Assembly Square	Modular Buildings
2	Carousel	Creator
3	Creative Builder Box	Classic
4	Creative Box	Classic
5	Blue Creative Box	Classic
6	Red Creative Box	Classic
7	Green Creative Box	Classic
8	Orange Creative Box	Classic
9	Demolition Site	Juniors
10	Police Truck Chase	Juniors
Total rows: 296 of 296 Query complete 00:00:00.043		

Q4.The SQL statements and output results of 4b

```
select count(*) as set_total_num, year
from (
    select *
    from sets
    where 1950<=sets.year and sets.year<=2017
)
group by year
order by set_total_num desc
```

Total row: 66

https://github.com/KennyHsu91/2023_fall_DB/blob/master/hw1/result/4b.csv

	set_total_num bigint	year integer
1	713	2014
2	665	2015
3	615	2012
4	596	2016
5	593	2013
6	503	2011
7	447	2002
8	444	2010
9	415	2003
10	402	2009
Total rows: 66 of 66		Query complete 00:00:00.057

Q5.The SQL statements and output results of 4c

```
with cnt(name, theme_num) as(
  select themes.name, count(*)
  from sets, themes
  where sets.theme_id=themes.id
  group by themes.id
)
select name, theme_num
from cnt
order by theme_num desc
limit 1
```

Total row: 1

	name character varying (300)	theme_num bigint
1	Gear	246
Total rows: 1 of 1		Query complete 00:00:00.041

Q6.The SQL statements and output results of 4d

```
select themes.name, avg(sets.num_parts) as avg_num_part
from sets join themes
on sets.theme_id=themes.id
group by themes.id
order by avg_num_part asc
```

Total row:575

https://github.com/KennyHsu91/2023_fall_DB/blob/master/hw1/result/4d.csv



	name character varying (300)	avg_num_part numeric
1	Wooden Box Set	-1.00000000000000000000
2	Train	0.00000000000000000000
3	Samsonite	0.00000000000000000000
4	Mindstorms	0.00000000000000000000
5	Key Chain	0.18181818181818181818
6	Technic	1.00000000000000000000
7	Imperial Guards	1.00000000000000000000
8	Supplemental	1.80000000000000000000
9	Power Functions	1.8823529411764706
10	Control Lab	2.00000000000000000000
Total rows: 575 of 575		Query complete 00:00:00.054

Q7.The SQL statements and output results of 4e

```
select count(*) as cnt, cn
from(
select distinct inventory_parts.part_num , colors.name as cn
from inventory_parts, colors
where inventory_parts.color_id=colors.id
order by inventory_parts.part_num
)
group by cn
order by cnt desc
```

```
limit 10
```

Total row:10

	cnt bigint 	cn character varying (50) 
1	4714	White
2	4376	Black
3	2938	Yellow
4	2882	Red
5	2000	[No Color]
6	1833	Blue
7	1596	Light Bluish Gray
8	1519	Dark Bluish Gray
9	1351	Light Gray
10	1048	Tan

Total rows: 10 of 10 Query complete 00:00:02.062

Q8.The SQL statements and output results of 4f

```
with qu(in_id,qu_sum,part_num,colorname) as
(
    select
        inventory_parts.inventory_id,
        sum(inventory_parts.quantity),
        inventory_parts.part_num,
        colors.name
    from inventory_parts, colors
    where inventory_parts.color_id = colors.id
    group by
        colors.id,
        inventory_parts.inventory_id,
        inventory_parts.part_num
),
t_q(t_id,t_n , cname ,total) as
(
```

```

select
    sets.theme_id as t_id,
    themes.name as t_n,
    qu.colorname as cname,
    sum(qu.qu_sum) as total
from qu,inventories,sets,themes
where
    qu.in_id=inventories.id and
    inventories.set_num=sets.set_num and
    sets.theme_id = themes.id
group by sets.theme_id, qu.colorname, themes.name
order by themes.name asc
)
, maxtotal (m_id,max_tot)as
(
    select t_id, max(total) as max_tot
    from t_q
    group by t_id
)
select t_q.t_n, t_q.cname
from t_q inner join maxtotal on t_q.t_id=maxtotal.m_id and t_q.total =
maxtotal.max_tot

```

Total row:568

https://github.com/KennyHsu91/2023_fall_DB/blob/master/hw1/result/4f.csv

	t_n character varying (300)	cname character varying (50)
1	12V	Black
2	12V	Light Gray
3	4 Juniors	White
4	4.5V	Black
5	4.5V	Blue
6	9V	Black
7	9V	Dark Bluish Gray
8	Advent	Red
9	Advent Sub-Set	Red
10	Adventurers	Black
Total rows: 568 of 568		Query complete 00:00:02.997